Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Currently Amended) A method for acquiring a projection data set, comprising:

rotating a distributed X-ray source and a detector array about a ~~volume of interest,~~ volume containing a heart having a cardiac cycle, wherein a rotational period of the distributed X-ray source comprises a length of time required for image reconstruction and is approximately a multiple of the cardiac cycle, ~~greater than eight seconds and~~ wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;

emitting X-rays from the distributed X-ray source; [[and]]

acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays at each view location of a gantry;

generating a set of interpolated projections by interpolating the projection data set using phase information from the projection data set or from a set of concurrently acquired phase data and apriori frequency content of the projection data set, wherein each interpolated projection characterizes the projection data at a particular view location of the gantry and at a particular time; and

reconstructing the set of interpolated projections to generate one or more images.

Claim 2. (Canceled)

Claim 3. (Original) The method as recited in claim [[2]] 1, further comprising:

associating two or more images to generate a volume rendering.

Claim 4-5. (Canceled)

Claim 6. (Original) The method as recited in claim [[2]] 1, wherein interpolating the projection data set comprises reducing statistical noise in the projection data set.

Claim 7. (Original) The method as recited in claim 6 further comprising reducing an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

Claim 8. (Canceled)

Claim 9. (Currently Amended) A computer program, provided on one or more computer readable media, for acquiring a projection data set, comprising:

a routine for rotating a distributed X-ray source and a detector array about a ~~volume of interest,~~ volume containing a heart having a cardiac cycle, wherein a rotational period of the distributed X-ray source comprises a length of time required for image reconstruction and is approximately a multiple of the cardiac cycle, ~~greater than eight seconds and~~ wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;

a routine for emitting X-rays from the distributed X-ray source, wherein said addressable X-ray focal spots of the distributed X-ray source are activated so that one or more view locations relative to the heart is substantially identical; [[and]]

a routine for acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays at each view location of the gantry;

a routine for generating a set of interpolated projections by interpolating the projection data set using phase information from the projection data set or from a set of concurrently acquired phase data and apriori knowledge of frequency content of the projection data set, wherein each interpolated projection characterizes the projection data at a particular view location of the gantry and at a particular time; and

a routine for reconstructing the set of interpolated projections to generate one or more images.

Claim 10. (Canceled)

Claim 11. (Original) The computer program as recited in claim [[10]] 9, a further comprising:

a routine for associating two or more images to generate a volume rendering.

Claim 12-13. (Canceled)

Claim 14. (Original) The computer program as recited in claim [[10]] 9, wherein the routine for generating a set of interpolated projections reduces statistical noise in the projection data set.

Claim 15. (Original) The computer program as recited in claim 14, further comprising a routine for reducing an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

Claim 16. (Canceled)

Claim 17. (Currently Amended) A CT image analysis system of volume containing a heart, comprising:

a distributed X-ray source, disposed on a gantry and providing multiple projection data sets scanned over an angular coverage of the gantry less than about 360 degrees , wherein a rotational period of the distributed X-ray source about a volume containing the heart comprises a length of time required for image reconstruction, ~~a volume of interest is greater than eight seconds, and~~ wherein the distributed X-ray source comprises a plurality of addressable X-ray

focal spots;

a detector configured to detect the radiation emitted by distributed X-ray source and to generate one or more signals responsive to the radiation, wherein the detector comprises a plurality of detector elements;

a system controller configured to control the X-ray source and detector and to acquire a set of projection data during ~~one or more rotations~~ rotation of the X-ray source and detector about a volume containing the heart ~~a dynamic object~~ comprising a length of time required for image reconstruction from one or more of the detector elements via a data acquisition system; and

a computer system configured to receive the set of projection data; wherein the computer system is further configured to generate a set of interpolated projections by interpolating the set of projection data using phase information from the projection data set or from a set of concurrently acquired phase data and apriori knowledge of the frequency content of the set of projection data, wherein each interpolated projection characterizes the projection data at a particular view location of the gantry and at a particular time and to reconstruct the set of interpolated projections to generate one or more images.

Claim 18. (Canceled)

Claim 19. (Original) The CT image analysis system as recited in claim [[18]] 17, wherein the computer system is further configured to associate two or more images to generate a volume rendering.

Claim 20-21. (Canceled)

Claim 22. (Original) The CT image analysis system as recited in claim [[18]] 17, wherein generating a set of interpolated projections reduces statistical noise in the set of projection data.

Claim 23. (Original) The CT image analysis system as recited in claim 22, wherein the computer is further configured to reduce an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

Claim 24. (Canceled)

Claim 25. (Currently Amended) A CT image analysis system, comprising:

means for rotating a distributed X-ray source and detector about a volume containing the heart having a cardiac cycle ~~volume of interest~~, wherein the rotational period of the distributed X-ray source comprises a length of time required for image reconstruction, ~~is greater than eight seconds, and~~ wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;

means for emitting X-rays from the distributed X-ray source; [[and]]

means for acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays;

means for activating the addressable X-ray focal spots to acquire a collection of projection data at each view location of the gantry;

means for generating a set of interpolated projections using phase information from the projection data set or from a set of concurrently acquired phase data and apriori knowledge of the frequency content of the projection data set;

means for reconstructing the set of interpolated projections to generate one or more images.

Claim 26. (Canceled)

Claim 27. (New) The method according to claim 1, wherein a scan path of the distributed X-ray source and the detector array is subdivided into a number of arcs, and wherein the rotational period is approximately equal to a time required for one cardiac cycle multiplied by the numbers of arcs.

Claim 28. (New) The method according to claim 1, further comprising adjusting the addressable X-ray focal spots of the distributed X-ray source so that a particular view location of one or more view locations provided by the gantry relative to the heart is substantially identical.

Claim 29. (New) The method according to claim 1, wherein the projections are acquired at discrete points in time, converted into a continuous-time representation, and interpolated to said particular time with respect to the cardiac cycle.